

gonum. The following have five or more species: Asplenium, Poa, Juncus, Anemone, Corydalis, Viola, Stellaria, Astragalus, Cotoneaster, Saxifraga, Sedum, Lonicera, Valeriana, Artemisia, Senecio, Saussurea, Primula, Androsace, Gentiana, Veronica, Pedicularis, Nepeta, Salix and Allium.

One of the most interesting plants is *Arceuthobium minutissimum*, a tiny parasite belonging to the Loranthaceae which is able to kill pine trees. The most striking flower is the blue poppy, a *Meconopsis*. *Megacarpa polyandra* is a curious crucifer with many stamens. The edelweiss, *Leontopodium alpinum*, is abundant. *Primula reptans* is so small that the flower is taller than the whole plant and is much larger than the leaves.

A number of our common introduced American weeds are apparently indigenous, including mullein, yarrow, *Capsella*, *Poa* sp., *Dactylis glomerata*, fireweed, *Galium aparine*, *Galinsoga*, *Plantago* sp., *Brunella* and *Leonurus*.

NEW YORK CITY.

A FOSSIL CELTIS FROM COLOMBIA

EDWARD W. BERRY

I am indebted to Dr. W. P. Woodring for the characteristic fossil fruit of an Eocene species of *Celtis* which is described in the following note. The specimen is of especial interest, not only because it represents the first fossil species of this genus, which is so abundant in the existing flora of South America, that has been found on that continent, but also because, unlike so many similar plant fossils that have come into my hands from South America, the geological age of the material is definitely known. I owe the specimen to the courtesy of the Tropical Oil Company.

The specimen upon which the present species is based was collected by A. Iddings and R. L. Beckelhymer on the east side of a hill one mile west of Pijaquay, on the trail passing directly over the hill to Don Gabriel, in the Department of Bolivar, Colombia. It came from marine fossiliferous deposits determined by Dr. Woodring, to be of middle Eocene age, that is, about the same age as the Claiborne group of our Gulf Coastal Plain, the Green River formation of the western Interior (Wy-

oming), and the Lutetian or Auversian stages of the standard European Eocene section.

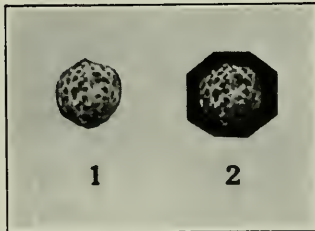
The present species can be exactly matched by the fruits of several existing species of this large genus, but its great age is undoubted proof that it represents a distinct and extinct botanical species, and it is therefore described as such. It may be called *Celtis bolivarensis* in allusion to the Department of Colombia where these Eocene deposits occur, which name in turn commemorates the great South American liberator.

CELTIS BOLIVARENSIS Berry, n. sp.

FIGS. 1, 2

The species may be somewhat incompletely characterized as follows:

Stone of a drupaceous fruit, of relatively small size, nearly spherical in form, shortly acuminate tipped distad. Polar diameter slightly longer than the equatorial diameter. Dimensions: Length 5.5 mm., equatorial diameter 4 mm. in one direction and 5 mm. at right angles to the minimum diameter, the difference being probably due to a slight amount of deformation during or subsequent to fossilization. There are four equally spaced smooth and slightly angular longitudinal areas dividing the stone into quadrants, and uniting to form the acuminate tip and the slight prominence at the chalazal pole. The surface of each quadrant is conspicuously pitted, though scarcely meriting the term rugose, by about twenty well distributed rounded depressions or pits. These vary somewhat in size and outline, and are separated by rounded ridges, which, however, do not project above the general surface of the stone.



Celtis bolivarensis Berry, n. sp. $\times 2$ from the middle Eocene of Colombia.

It may well be doubted if, in most cases, species of *Celtis* can be distinguished by means of the characters of the stones. This can be done in the case of some of the existing species, but is impossible in the case of others. The present species of *Celtis* is associated with a leguminous seed which it has not yet been possible to identify.

The genus *Celtis* is a most interesting member of the family Ulmaceae, in fact the whole family bristles with problems of distribution and geologic history, and none of the genera surpass *Celtis* in this respect. As currently understood *Celtis* includes about eighteen fossil species ranging in age from Eocene to Pleistocene. The Eocene species are four in number and all are American. The Oligocene species are also four in number and are North American and south European. The rather numerous Miocene species are found in Europe and in North and South America. The Pliocene species are European and Asiatic. The Pleistocene species known to date are all North American and represent the section *Euceltis* of Planchon.

The living species of *Celtis* number about 90 and are widely distributed and usually divided into four sections or sub-genera, namely: *Euceltis*, *Sponioceltis*, *Solenostigma*, and *Momisia*, which are sometimes considered and are probably entitled to generic rank. The present fossil species belongs to the sub-genus *Momisia* of Dumortier, which has about 25 existing species ranging from Texas to the Argentine, and with the genera *Ampelocera*, *Trema*, being especially characteristic of the warmer parts of South America. *Momisia* appears to have invaded the southern United States from equatorial America along with the fossil flora that characterizes the middle and upper Eocene in that region.

In view of the impossibility of making fine discriminations from the fruits alone, the present fossil species is referred to *Celtis*, using that term in the wider sense. The majority of the existing species are mesophytic types of humid regions, but several of the forms, notably *Celtis occidentalis* Linn., in our western states, and *Celtis tala* in the northern Argentine, survive very adverse conditions and aridity.

JOHNS HOPKINS UNIVERSITY,
BALTIMORE, MD.